U.S. Army High Performance Computing (HPC) Center

What It Is:

High performance computers are able to analyze very large groups of data at high speeds. Scientists can manipulate the data to create visual simulations of complex systems-for example, to "see" how a parachute opens.

Why It's Needed:

The **Army High Performance Computing (HPC) Research Center** provides all the resources — such as hardware, software, data storage, archiving and training — needed to support warfighter research.

How It Works:

We are collaborating with the Army HPC Research Center to model airdrop systems. Two examples of how we've used HPC assets to simulate airdrop technology:

How Parachutes Inflate: parachutes are a vital technology for getting warfighters and supplies to the battlefield. A parachute's canopy is flexible: its shape is affected by both the cargo it carries and the airflow around it. As the canopy changes shape, that in turn affects its aerodynamic properties. We've developed a computer model that can simulate both the parachute's shape and the pressures on its surface-information we can't get from wind tunnel testing. The significance of this work has been internationally recognized.

How an Aircraft's Wake Affects Paratroopers: envision a group of transport aircraft flying in formation: paratroopers who jump from the second aircraft will cross the turbulent wake left by the first aircraft. How will this affect their descent? The Army hopes to improve paratrooper safety by using HPC to simulate flight formations and conditions.

Benefits:

Reduced Costs….HPC lets us simulate and test new designs in a virtual proving ground, eliminating the need for costly cut-and-try experiments.

Collaborative Efforts…The Center pools the resources of Army, industry and university researchers to apply the latest computational technology.

Point of Contact:

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Latest Version

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